

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**p1020: graded take-home open-note practice exam (version 215)****Question 1**

Let  $f$  represent a function. If  $f[3] = 4$ , then there exists a knowable solution to the equation below.

$$y = 20 \cdot f\left[\frac{x}{2} - 18\right] - 44$$

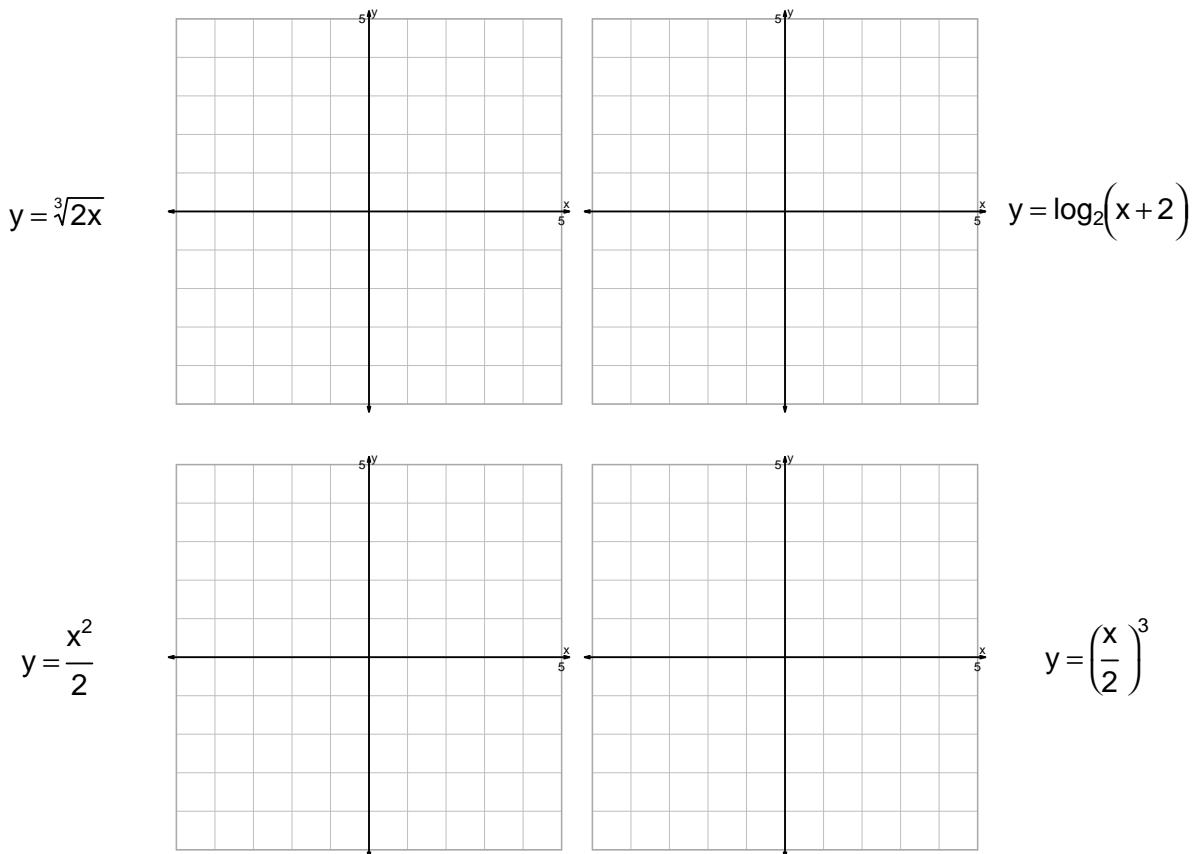
Find the solution.

$x =$

$y =$

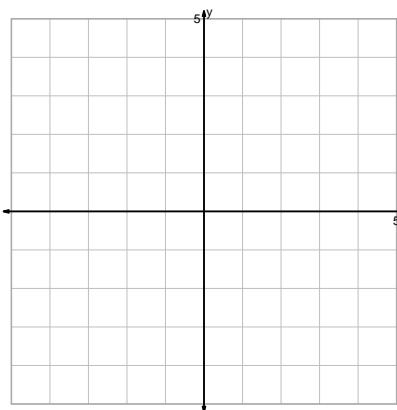
**Question 2**

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

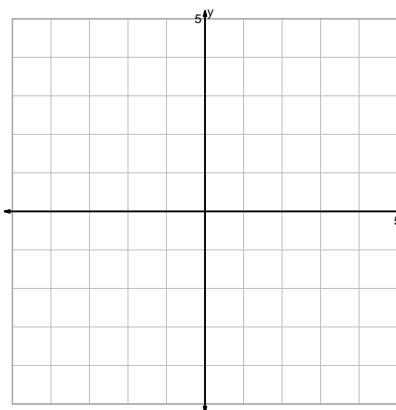


Question 2 continued...

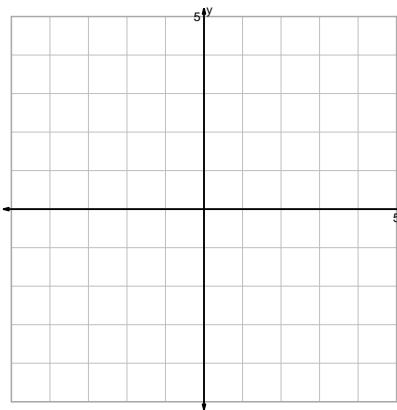
$$y = \sqrt[3]{x} + 2$$



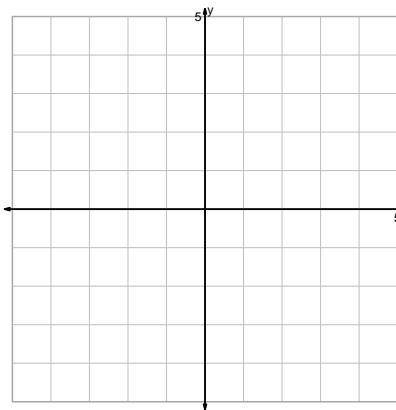
$$y = 2^{-x}$$



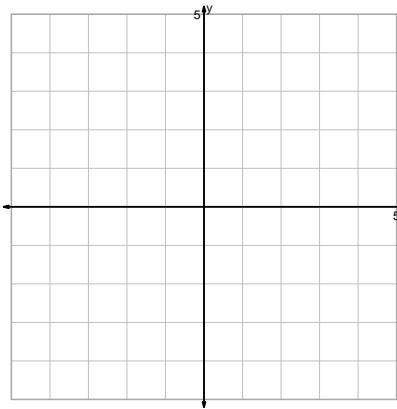
$$y = 2 \cdot 2^x$$



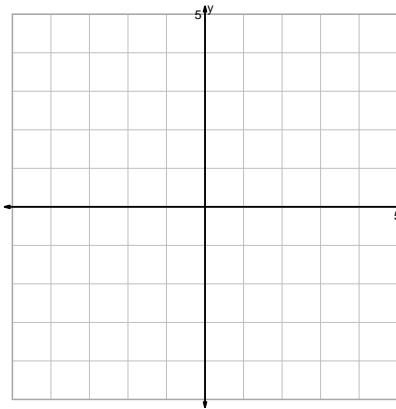
$$y = x^2 - 2$$



$$y = \sqrt{x-2}$$

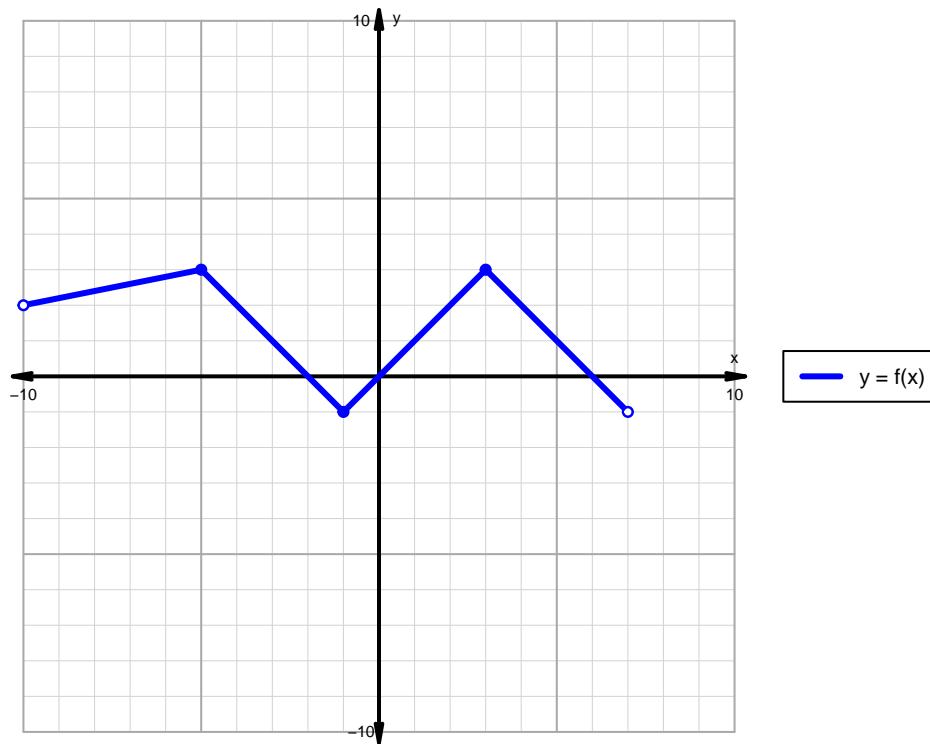


$$y = -\sqrt{x}$$



**Question 3**

A function is graphed below.



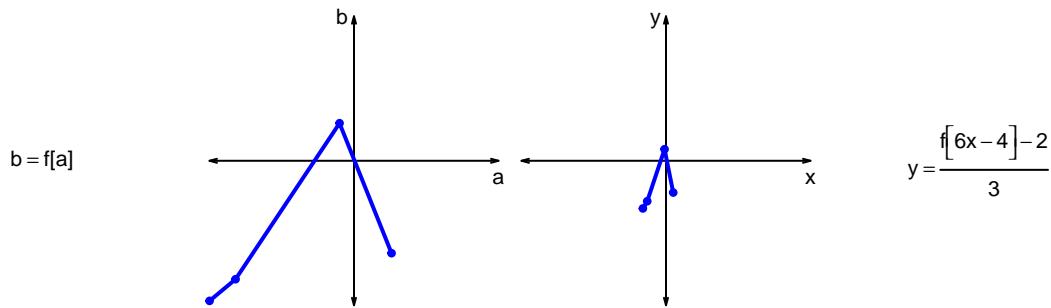
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

## Question 4

Let  $f$  represent a function. The curves  $b = f[a]$  and  $y = \frac{f[6x-4]-2}{3}$  are represented below in a table and on graphs.

a	b	x	y
-100	-97	-16	-33
-82	-82	-13	-28
-10	26	-1	8
26	-64	5	-22



- a. Write formulas for calculating  $x$  from  $a$  and calculating  $y$  from  $b$ . (Or, write the coordinate transformation formula.)
  
  - b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve  $y = f[x]$  into the second curve  $y = \frac{f[6x-4]-2}{3}$ ?

### Question 5

A parent square-root function is transformed in the following ways:

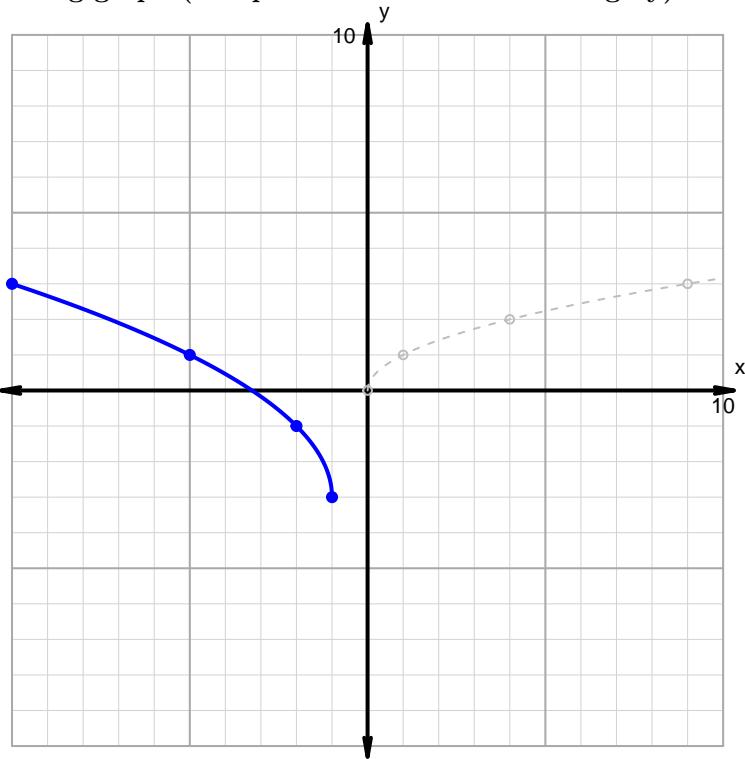
#### Horizontal transformations

1. Translate right by distance 1.
2. Horizontal reflection over  $y$  axis.

#### Vertical transformations

1. Vertical stretch by factor 2.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

**Question 6**

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x + 1| - 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	